

6. NOTICES OF A NEW GENUS OF DELPHINOID WHALES FROM THE CAPE OF GOOD HOPE, AND OF OTHER CETACEANS FROM THE SAME SEAS. BY DR. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., F.L.S.

Mr. Layard has most kindly sent to me for examination and comparison the skulls of the Cetacea which are contained in the South-African Museum, under his charge. A short notice of them, extracted from a letter from him, was read at a former Meeting of the Society (see Proc. Zool. Soc. 1865, p. 357).

As the specimens are to be returned to Africa, I intend to have a cast made of each of the skulls here described, as a well-made cast is the best substitute for a real skull that we can have for comparison.

The collection consists of six skulls, which belong to the following species:—

1. *Delphinis doris*, Gray, Zool. Erebus & Terror.

2. *Delphinus euphrosyne*, Gray, Zool. Erebus & Terror.

3. *Steno frontatus*, Gray, Zool. Erebus & Terror.

4. The skull of a species of *Steno* with numerous small slender teeth, which appears to be distinct from any that I have before seen. It may be thus described:—

STENO CAPENSIS.

The beak of the skull elongate, rather compressed, tapering, and more compressed in front. Teeth  $\frac{37-37}{37-37}$ , small, slender, about five in an inch. Lower jaw slender, attenuated, and without any gonyx in front; the symphyses nearly one-fifth the length of the jaw.

“*Delphinus obscurus*, Gray,” Cat. S. A. Museum.

*Hab.* Cape of Good Hope (*Capt. Carew*, South-African Museum).

Length of the skull 16, of beak from the notch 10, of the lower jaw 13, of symphyses  $2\frac{3}{4}$  inches; width of the beak at the notch  $3\frac{1}{2}$ , of the brain-case at the hinder part of the orbit  $6\frac{3}{4}$  inches.

The skull is somewhat like that of *Steno attenuatus* in the British Museum; but the beak of the skull is longer compared with the size of the brain-case, and it is more gradually attenuated and slender, and higher in front.

5. *Grampus richardsonii*, Gray, Zool. Erebus & Terror; Cat. Cetacea Brit. Mus. 85.

*Hab.* Cape Seas (South-African Museum).

The skull resembles in most particulars that of *Grampus cuvieri*, and may be considered that of a typical species of the genus. It agrees with *Beluga* in the convexity of the triangle in front of the blowers, and in the general form; but it differs from that genus in the elevation of the margins of the maxillæ over the orbits, and on the side of the hinder part of the beak in front of the notch, showing that the genus is intermediate in form between *Beluga* and *Orca*.

*Grampus* and *Beluga* are peculiar for having teeth only in the front part of the lower jaw, as in *Globiocephalus*; but the teeth of *Grampus* are permanent, while those of *Beluga* are early deciduous.

The lower jaw is so nearly like the lower jaw which the British Museum received from the Museum at Haslar Hospital, without any habitat, and which I described in the 'Catalogue of Cetacea' under the name *Grampus richardsonii*, that I have been induced to refer the skull to that species.

The lower jaw from the Cape Seas only differs from the lower jaw of the typical specimen of *G. richardsonii* in being rather more slender in front, just behind the gonyx and the end of the teeth-line, and in the teeth being apparently rather shorter and more slender; but the base of the teeth of the typical specimen is entirely exposed, and in the one from the South-African Museum they are still imbedded in the dried gums; so that the difference is more apparent than real.

The upper edge of the orbit is raised into a decided marginal ridge. The maxillary bones in front of the notch are rather expanded and well bent up on the edge.

The triangular space in front of the blower is convex, evenly rounded, and with a well-marked oblique groove on each side in front.

The intermaxillary bones are very broad, with a hard, shining, smooth, rather convex upper surface; they cover fully two-thirds of the upper part of the hinder portion, and much more, or at least four-fifths, of the front part of the beak. The palate is flat in front, and rather convex behind. The upper jaw is rather bent down at the tip, and is destitute of teeth, but has a submarginal line with a few small pits. The lower jaw has four conical teeth on each side in front, placed over the gonyx.

Length of the skull 18, of beak from the notch  $10\frac{1}{2}$ , of lower jaw  $14\frac{1}{2}$  inches; width of the brain-case at the centre of the orbit 11, of beak at the notch  $7\frac{3}{4}$  inches.

The triangle in front of the blowers in the skulls of the European species is much elongated, the slender front part being produced between the intermaxillaries nearly to the end of the beak.

(1) *G. rissoi*, of Nice, with 5—5 teeth on the front of the lower jaw (Gervais, Zool. et Paléont. Franç. t. 57. f. 1, 2).

(2) *G. griseus*, of Brest, with only 2—2 teeth on the front of the lower jaw (Gervais, l. c. t. 57. f. 5).

In the Cape species the triangle is shorter and much broader compared with its length, the front side-margin being more transverse.

(3) *G. richardsonii*.

In *G. rissoi* the outer edges of the intermaxillaries are sinuous and rather contracted to nearly the middle of their length. In *G. richardsonii* the outer edges are rather slightly arched and bent out, the bones are widest in the middle of their length, and the nostrils are bent to the left side, the right side of the skull being most developed.

6. The skull which I described from the notes of Mr. Layard and the drawing of Mr. Trimen, under the name of *Ziphius layardii* (see

Proc. Zool. Soc. 1865, p. 358), proves on examination to be a very distinct species of the genus, allied to *Z. micropterus*, as I decided from the notes and drawing. The peculiar form of the teeth, which are elongated and arched over the outer surface of the upper jaw, so as to prevent the animal from opening its mouth beyond a very limited extent, it has been suggested to me, may be only an individual peculiarity or malformation. I scarcely think this is the case; but even if it should be, it will not in the least militate against the distinctness of the species, as the proportion of the beak to the size of the brain-case, and the form of the beak and position and form of the teeth, with a small point near the tip, are sufficient to clearly characterize the species.

The front edges of the lower teeth are absorbed or worn away by the friction of the upper jaw against them, and the vomer forms a large fusiform prominence on the upper surface of the base of the beak, in front of the blowers, between the narrowed part of the elongate, slender intermaxillaries, which are enlarged and thickened behind, forming the outer sides of the blowers.

In this respect it agrees with the figure of the skull of *Z. densirostris* from the Indian Seas, given by M. Gervais (Zool. et Paléont. Franç. t. 40. f. 3-6); but the vomer is more prominent in the Cape species. The Cape species has the slender, elongated, tapering lower jaws, and a very much longer beak to the skull, like that of *D. micropterus* of Havre (Gervais, l. c. t. 49. f. 1).

7. The skull which, from the inspection of the drawing of Mr. Trimen, I was inclined to regard as a new species of *Hyperoodon*, forming a peculiar section of the genus, and which I had provisionally named *Hyperoodon capensis* (Proc. Zool. Soc. 1865, p. 359), proves on examination to be an entirely new form, which appears to be intermediate in structure and form between *Hyperoodon* and *Catodon*. It agrees with *Catodon* and *Kogia* in having a large concavity on the crown of the skull, to contain the spermaceti (or "head-matter," as it is called by the whalers), over the blowers, and with *Hyperoodon* in having an elongated beak, with thick prominent nasal bones over the blowers, and in having none or only two or four deciduous teeth in the front of the lower jaw.

What I believed, in the small drawing made by Mr. Trimen, were the slightly developed lateral expansions of the maxillaries, which are characteristic of the genus *Hyperoodon*, prove on examination of the skull to have represented the much thickened intermaxillaries and the very large callous prominent vomer which is between them on the upper surface of the beak. The skull, as is generally the case in the Cetacea, is considerably distorted, the left side being much the smallest and least developed.

The genus may be thus defined:—

#### PETTORHYNCHUS.

The skull beaked; the brain-case hemispherical, margined behind and on the sides by the prominent edges of the maxillæ, occipital,

and other bones, with a large oblong concavity under the prominent enlarged nasal bones in front of the deeply seated blowers; the inner surface of the concavity lined on the side by the expanded hinder end of the intermaxillaries, and edged on the sides by the raised edges of these bones and the inner margins of the hinder parts of the maxillæ, the confines of the concavity being separated from the side-margin of the brain-case by a deep impression. The beak elongate, slender, compressed on the sides, fringed on the upper part of the sides by the edges of the enlarged callous intermaxillaries, which contain between them a much-enlarged callous vomer, which tapers in front into the end of the beak, and is truncated behind, filling up the narrowed fore part of the frontal concavity.

The upper jaw toothless. The lower jaw slender, produced in front, toothless; it may have had two teeth in front in the young state, as there are obscure indications and two pits.

The skull is much more like the usual form of that of the Delphinoid Whales than that of *Catodon* or *Kogia*, and somewhat like that of an *Hyperoodon* without the elevated ridges of the maxillæ on the sides of the beak.

The peculiarity of the genus is the great development of the intermaxillaries and the large size and callous state of the upper surface of the vomer.

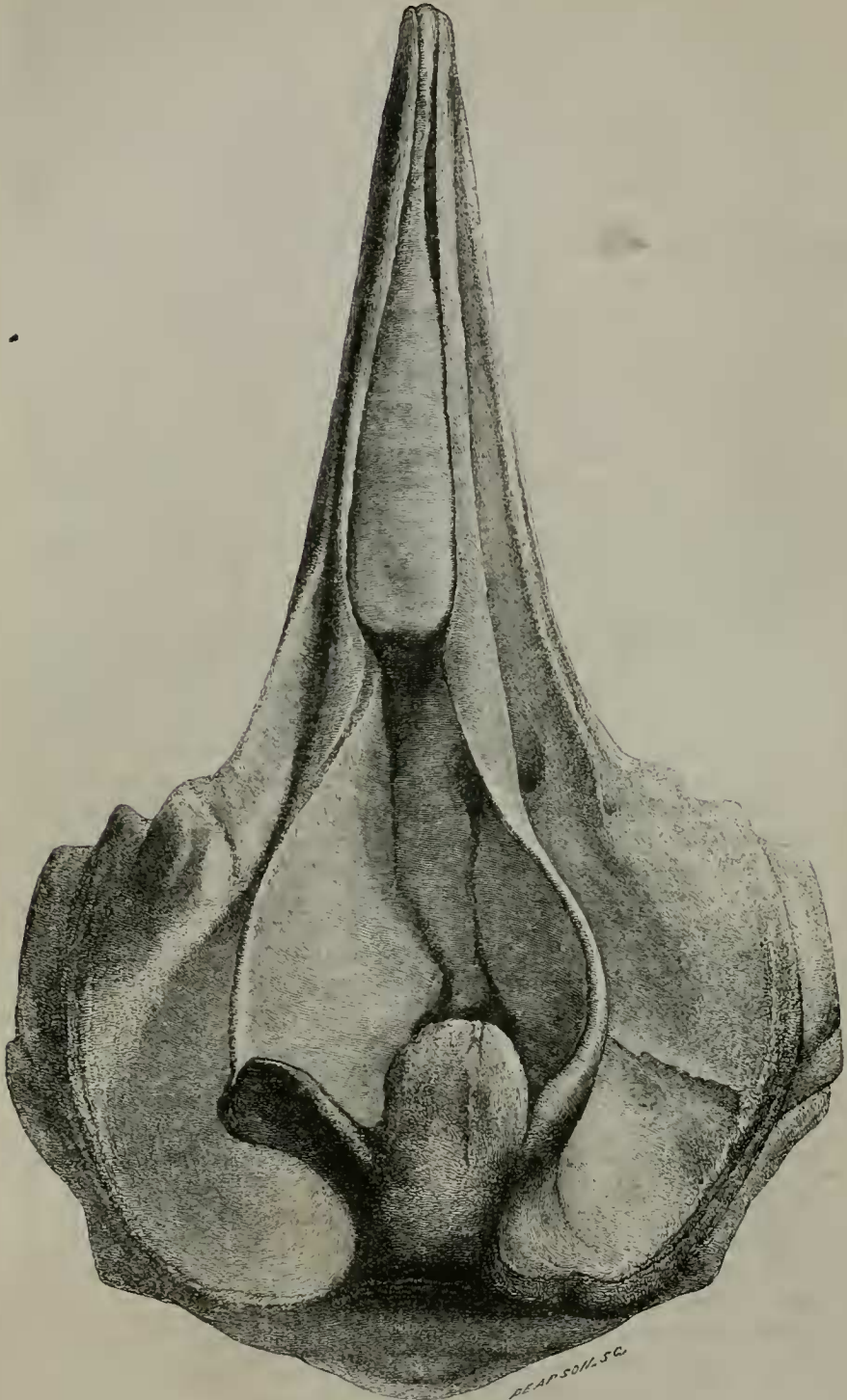
The intermaxillary bones which fringe the upper part of the sides of the beak are thick, hard, and shining, forming with the enlarged vomer the upper part of the beak; they are expanded behind so as to form the large hemispherical cavity in the crown, with nostril and blower at the base of its hinder part. This cavity is lined on the inner side with the expansion of the intermaxillaries, which are supported on each outer side by a wall formed by the elevation of the inner edge of the hinder part of the maxilla. The wall of the cavity is separated from the outer margin of the maxilla, which forms the inner part of the outer edge of the brain-case, by a deep concavity.

The upper part of the spermaceti-concavity is arched over by the thickened prominent nasal bones, and by the dilatation of the thick hinder edge of the walls.

In *Catodon* and the allied genus *Kogia* the spermaceti-cavity occupies the whole upper surface of the skull, and is surrounded by an erect wall formed by the elevated hinder and lateral edges of the maxillæ. It is continued in front to the end of the broad expanded beak of the skull. The blowers are in the base of the hinder part of the concavity.

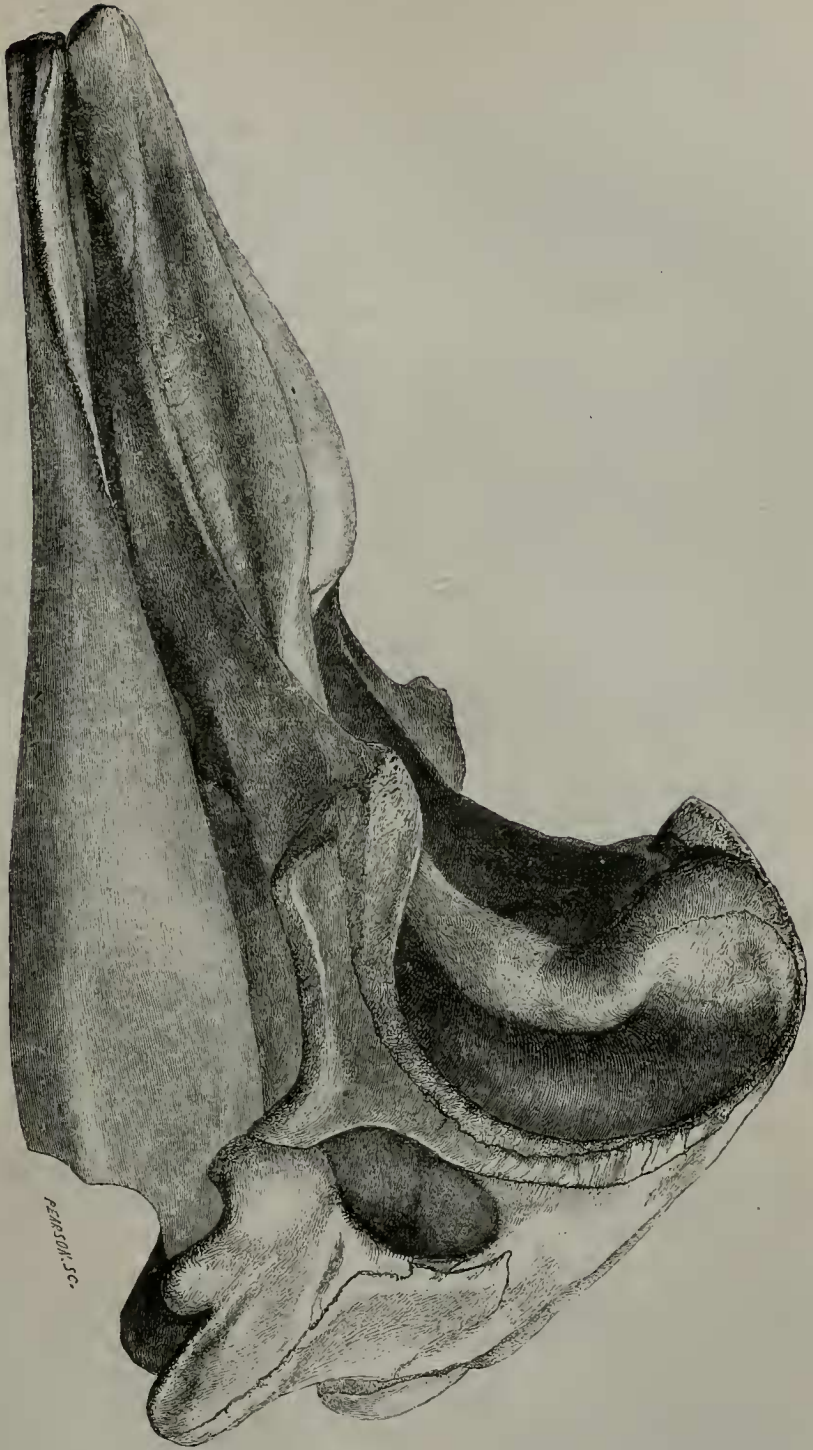
The intermaxillary bones are narrow, elongate, with the linear vomer forming a sunken groove between them on the upper surface of the beak. In *Catodon* the hinder part of the intermaxillary is only slightly dilated, and forms but a small part of the base of the crown concavity, as shown in Cuvier's figure (Oss. Foss. v. t. 22. f. 1-3); and from Mr. Macleay's description they seem to form a smaller part of the surface of the concavity in *Kogia* (see p. 39).





Skull of *Petrorhynchus capensis*.

(By a mistake of the artist, the sides of the skull in the figure are reversed.)



Skull of *Petrorhynchus capensis* (side view).  
(By a mistake of the artist, the sides of the skull in the figure are reversed.)

## PETRORHYNCHUS CAPENSIS.

*Hyperoodon capensis*, Gray, P. Z. S. 1865, p. 359.

*Hab.* Cape Seas.

The skull of this Whale resembles in several particulars the skull of *Ziphius cavirostris*, figured by Gervais (Zool. et Paléont. Franç. t. 39); but the cavity on the crown of that species is only slightly developed, though it is apparently rather more developed in the other specimens figured on the plate (t. 38. f. 1, 2) of that work; and the vomer is sunk in a groove as in the other Ziphioid genera, except in the specimen figured at t. 38. f. 2, which has the most developed frontal cavity, and in this there is an appearance as if the vomer was larger.

The study of this skull and of the *Ziphius* described by M. Van Beneden, received from the Cape, has induced me to reconsider the arrangement of the genera of Ziphioid Whales, which I have formed into a family, *Ziphiidæ*, which may be thus characterized:—

Head beaked; blower linear, transverse, on the back of the head. The upper jaw toothless, or with a few rudimentary teeth, which are not or only rarely developed. Lower jaw with a few teeth on the side or in front, which are sometimes early deciduous or not exposed. Body elongate; dorsal fin falcate; pectoral fins small, low down, and rather close together on the middle of the chest; fingers five, of four or five phalanges. Skull with an enlarged nasal over the blowers, which are more or less sunken.

This family may be divided into three sections.

1. HYPEROODONTINA. *Teeth in front of the lower jaw conical. Beak with a high crest on each side, formed by the elevation of the maxillary bones.*

HYPEROODON. Beak of skull straight; crest of beak short, edged, only as high as occiput. *H. butzkopf*.

LAGENOCETUS. Beak of skull ascending; crest of beak flat, tipped, higher than the occiput. *L. latifrons*.

2. EPIODONTINA. *Teeth in front of lower jaw cylindrical or conical. Beak conical; the intermaxillary enlarged behind, forming a more or less large cavity round the blowers.*

ALIAMA. Vomer simple; intermaxillary only slightly elevated on the sides of the blower. Teeth large. *A. indica* = *Ziphius indicus*, Van Beneden. Cape of Good Hope.

EPIODON. Vomer forming a sunken groove; intermaxillary forming a moderately high basin round the blower. *E. desmarestii* = *Ziphius cavirostris*, Cuvier. Mediterranean.

PETRORHYNCHUS. Vomer swollen, forming a large elongated tubercle between the callous intermaxillary; intermaxillary forming a high basin round the blower. *P. capensis*. Cape of Good Hope.

3. ZIPHINA. *Teeth in the side of the lower jaw compressed. Beak subcylindrical, simple; intermaxillary linear, slender, rather swollen on sides of blower.*

BERARDIUS. *Teeth in the front of the side of the lower jaw conical. B. arnouxi.*

ZIPHIUS. *Teeth in the middle of the sides of the lower jaw of the male large, compressed; of the female small, cylindrical, rudimentary. Lower jaw slender, tapering. Z. micropterus; Z. capensis.*

DIOPLODON. *Teeth in the middle of the lower jaw conical, compressed. Lower jaw broad behind, suddenly narrowing in front. D. sechellensis.*

On reconsidering the account of the Short-nosed *Physeter* of the Cape, I have been induced to believe that the *Physeters* should be separated from the *Catodons* into a separate family called *Physeteridae*, characterized by the oblong rounded form of the head with the blowers on the hinder part of the crown, with a small narrow inferior mouth, and by having an elevated compressed dorsal fin and an ovate pectoral one. The skulls of the species known confirm this idea, as they have the concavity on the crown divided by a more or less central bony ridge into two cells or cavities, instead of being simple like that of the *Catodons*.

M. de Blainville has figured and shortly described a skull that is in the Paris Museum, received from the Cape of Good Hope, under the name of *Physeter brevirostris*. On this skull I established the genus *Kogia*.

Mr. William S. Macleay, in his account of the skeleton of the Australian Sperm Whale, described and figured the skeleton of a *Physeter* thrown ashore on the coast of Australia, which is in the Australian Museum at Sydney, under the name of *Euphysetes grayii*.

It has been thought that these two genera are synonymous; but from the study of the figures and of the photograph of the bones of the Australian species, which have been kindly sent to me by Mr. Krefft, I am induced to believe that the genera are distinct, and that both ought to be adopted. They may be characterized thus—

1. KOGIA. The septum that divides the cavity on the crown of the skull very sinuous, folded so as to form a central funnel-shaped concavity. Beak as long as broad at the base.

*Kogia brevirostris* (= *Physeter brevirostris*, Blainv. Annals d'Anat. et de Phys. ii. t. 10, 1838). Cape of Good Hope. Skull Mus. Paris.

2. EUPHYSETES. The septum that divides the cavity on the crown of the skull simple, longitudinal, only slightly curved. Beak shorter than broad.

*Euphysetes grayii*, Macleay, on a New Sperm Whale, 1851, t. 2. Australia. Skeleton, Australian Museum, Sydney.